

SYSTEM AND METHOD FOR SWITCHING VOICE TRAFFIC RELATIONS
BETWEEN A TELEPHONE COMMUNICATION NETWORK AND AN INTERNET

Page 1, before the first paragraph, please insert the following heading and insert:

CLAIM FOR PRIORITY

This application claims priority to International Application No. PCT/DE00/00964 which was published in the German language on March 29, 2000.

Page 1, between lines 5 and 6 please insert the following headings and paragraph:

TECHNICAL FIELD OF THE INVENTION

This invention relates to a system and method of switching voice traffic relations, and in particular, to switching voice traffic relations between a telephone communication network and an internet.

BACKGROUND OF THE INVENTION

Please amend the paragraph beginning on line 6 of page 1 as follows:

Internet terminals of an Internet, i.e. an Internet-capable communication network, frequently set up communication relations to the Internet via a telephone communication network, e.g. a public telephone network. The Internet terminal is implemented, for example, by means of a personal computer which is connected to the telephone communication network, e.g. a public telephone network, via a modem, the connection of the telephone communication network in most cases also being connected to a telephone terminal, for example a telephone. The Internet terminal sets up a communication relation or a connection to an Internet server of an

Internet provider directly with the aid of a modem equipped with a dialing method or with the aid of the telephone.

Please amend the paragraph beginning on line 23 of page 1 as follows:

Voice information can be exchanged between the Internet terminals with the aid of the Voice over Internet Protocol, known as and called VoIP. Such a VoIP is described, for example, in recommendations of various IETF workgroups (among others a recommendation for the Session Initiation Protocol SIP) or ITU recommendation H.323, the voice information being considerably compressed and inserted into Internet transmission packets. Furthermore, voice connections can be set up between telephone terminals of a telephone communication network and Internet terminals with VoIP function. For this purpose, a gateway is provided with the aid of which the signaling of the telephone communication network is adapted to the Internet signaling. The voice information included in the transmission packets formed in the VoIP is converted into voice information according to the telephone communication network, and conversely. When a voice connection is set up from an Internet terminal to a telephone, its call numbers can be specified directly by the Internet terminal and, in the case of a connection set-up via the Internet terminal, a communication relation is first established with an SIP server in the case of IETF VoIP signaling or with a gatekeeper in the case of H.323 signaling. When it receives a call number which is allocated to a subscriber in the telephone communication network, the SIP server or gatekeeper sets up a communication relation to the gateway. From the latter, a voice connection to the telephone communication network. In the case of a connection set-up from a telephone of the telephone communication network, signaling is conducted from the switching device connected to the gateway to the gateway. From the latter, a communication

relation is set up to the SIP server or gatekeeper, with the aid of which the incoming call number is converted into an Internet-related terminal address. This terminal address is used for setting up a VoIP connection from the gateway to the Internet terminal determined by the terminal address.

Please amend the paragraph beginning on line 22 of page 2 as follows:

B1 A connection set-up from one telephone terminal to another telephone terminal, may result in the called telephone terminal being busy, the busy state being caused by a connection or communication relation already existing to the Internet. In principle, however, a communication relation would be possible via the gateway and the Internet because a voice connection or voice traffic relation, respectively, is additionally possible during an Internet session with the Internet due to the VoIP function.

Between lines 33 and 34 of page 2, please insert the following headings and paragraphs:

SUMMARY OF THE INVENTION

In one embodiment of the invention, there is a method for switching voice traffic relations between telephone terminals of a telephone communication network and Internet terminals. The method includes, for example, performing physical and protocol-related conversion of the voice traffic relations by a gateway connected to the Internet and the telephone communication network and setting a call diversion in the telephone communication network by one of a first telephone terminal before an Internet session or an associated Internet terminal during an Internet session, in such a manner that a connection setup for a the voice traffic relation, initiated by a second telephone terminal to the first telephone terminal, is diverted to the associated Internet terminal.

In another aspect of the invention, a uniform call number is provided for the telephone and Internet terminals.

In another aspect of the invention, the voice traffic relation is implemented by a Voice over Internet function in the Internet.

In yet another aspect of the invention, the call diversion is set by the Internet terminal by signaling via the gateway to the telephone communication network, the signaling being converted in the gateway.

In another aspect of the invention, the call diversion is set by the Internet terminal by signaling via a subscriber server and an intelligent communication network connected to the former and to the telephone communication network.

In another aspect of the invention, the call diversion is set by the Internet terminal by signaling via a subscriber server and a packet switching communication network connected to the former and the telephone communication network.

In still another aspect of the invention, the signaling between the respective Internet terminal and the subscriber server is implemented by Internet signaling, the Internet signaling is converted into signaling in one of the intelligent communication network or packet switching communication network in the subscriber server, and signaling is adapted to the signaling in the telephone communication network.

In another aspect of the invention, a diverted connection setup for a voice traffic relation is switched to the relevant Internet terminal with the aid of the Voice over Internet function in the Internet.

In another aspect of the invention, a uniform destination call number of the connection setup for a voice traffic relation, diverted into the Internet, is converted into an Internet-related Internet address by a call number server in the Internet.

In still another aspect of the invention, the call diversion is set with the aid of a communication system-related call diversion routine in a communication system of the telephone communication network.

In another aspect of the invention, the call diversion is effected by one of the associated telephone terminal or the Internet terminal with the aid of a modem function before an Internet session of an Internet terminal.

In another aspect of the invention, a modem function effecting the connection-set-up and the data transmission and representing a telephone terminal is associated with an Internet terminal implemented by a personal computer.

In another aspect of the invention, the Internet terminal is implemented by a personal computer and is associated with a telephone terminal.

In another aspect of the invention, the connection set-up of a telephone terminal is diverted to the gateway due to the call diversion set.

In another embodiment of the invention, there is a communication system for switching voice traffic relation between a telephone terminal of a telephone communication network and an Internet terminal, which is switched to an Internet via the telephone communication network. The system includes, for example, an access device being provided for the access from the telephone communication network to the Internet with a gateway connected to the telephone communication network and the Internet for physical and procedural conversion of voice traffic relations switched via the telephone communication network and the Internet and signaling

device provided in the Internet to set a call diversion in the telephone communication network for an Internet terminal which is coupled to the Internet via the telephone communication network.

In another aspect of the invention, a subscriber server configured for connection to the telephone communication network via an intelligent network and provided in the Internet such that the signaling device sets up a communication relation with the Internet terminal intending a call diversion and the telephone communication network provided in the subscriber server the Internet terminal configured to set a call diversion in the telephone communication network by signaling via the subscriber server.

In another aspect of the invention, the signaling device for setting up a communication relation between an Internet terminal and the subscriber server are designed with web page orientation.

In another aspect of the invention, a call number server is provided for setting and storing Internet-related Internet addresses by which Internet terminals can be currently reached.

In another aspect of the invention, the Internet addresses can be modified by a respective Internet terminal, as a result of which a call diversion to at least one of other Internet terminals, to a dialog device and a memory device is set.

In yet another aspect of the invention, an implementation of the Internet in accordance with the standard H.323, a gatekeeper is provided for the call control between the servers and the gateway and the access device.

BRIEF DESCRIPTION OF THE DRAWINGS

In the text which follows, the invention will be explained with reference to two drawings, in which:

Figure 1 shows a communication arrangement for implementing the invention in a block diagram.

Figure 2 shows a communication relation between a telephone terminal and an Internet terminal in a flowchart.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Please amend the paragraph beginning on line 34 of page 2 as follows:

The invention improves voice traffic relations between the terminals of telephone communication networks and the Internet.

Please amend the paragraph beginning on line 3 of page 2a as follows:

In one embodiment of the method according to the invention, a call diversion in the telephone communication network is set up by a telephone terminal before an Internet session or by an associated Internet terminal during an Internet session, in such a manner that a connection set-up for a voice traffic relation initiated from another telephone terminal to the telephone terminal is diverted to the associated Internet terminal. In this method, a uniform call number is advantageously used for terminals in the telephone communication network and in the Internet. An advantage of the method according to the invention is that no changes need to be carried out in the existing telephone communication network. Additionally, the function for a call diversion in the telephone communication network, set up by the Internet terminal, is possible with

minimum additional expenditure since signaling from the Internet to the telephone communication network is already implemented in a gateway or server and is expanded by setting a call diversion. A further advantage invention the improved availability of terminals when setting up voice traffic relations or voice connections between the telephone communication network and the Internet.

Please amend the paragraph beginning on line 24 of page 3 as follows:

According to a further embodiment invention, the call diversion is set up by an Internet terminal by signaling via a gateway to the telephone communication network, the signaling being converted in the gateway. This signaling is already implemented for voice traffic relations or voice connections, respectively, between the Internet and the telephone communication network and is supplemented by the capability of setting the call diversion. This addition can be provided with very little additional expenditure.

Please amend the paragraph beginning on line 1 of page 4 as follows:

As an alternative, the call diversion can be set up by an Internet terminal by signaling via a subscriber server and an intelligent communication network connected to the latter and to the telephone communication network. According to a further embodiment, the call diversion is set up by an Internet terminal by signaling via a subscriber server and a packet switching communication network connected to the latter and the telephone communication network. In this embodiment, the packet switching communication network is implemented, for example, in accordance with the X.25 standard and information is exchanged, for example, in accordance with a TCP/IP protocol. Signaling between the respective Internet terminal and the subscriber

server takes place in accordance with Internet signaling and the signaling in the subscriber server is converted into the signaling in the intelligent communication network. The signaling of the intelligent communication network is adapted to the signaling in the telephone communication network. The communication relation from the Internet terminal to the subscriber server is controlled via the web pages normally used in the Internet, i.e. a web-page-based interface to the Internet is implemented in the subscriber server. The connection between the subscriber server and the telephone communication network is advantageously established via an intelligent network, in which arrangement the signaling between the telephone communication network and the intelligent communication network is already implemented and the interface in the subscriber server can be implemented with little additional expenditure.

Please delete paragraph beginning on line 30 of page 4 in its entirety.

Please delete paragraph beginning on line 35 of page 4 in its entirety.

Please amend the paragraph beginning on line 18 of page 6 as follows:

In the method according to the invention, in order to provide for a voice traffic relation between a telephone terminal FE and an Internet terminal IKE connected to the Internet INT via a telephone communication network FEN (and currently conducting an Internet session or subsequently conducting an Internet session), a call diversion CF is set in the telephone communication network FEN or, respectively, the associated communication system KS, for the Internet terminal IKE, i.e. for the associated connection of the telephone communication network FEN. This setting causes a connection set-up initiated by a telephone terminal FE, which is to be switched to the telephone terminal FE, the associated Internet terminal IKE of which is currently

conducting an Internet session via the telephone connection, to be diverted to the Internet INT or, respectively, to the Internet terminal IKE conducting the Internet session.

Please amend the paragraph beginning on line 1 of page 7 as follows:

The subscriber server ISC also communicates with a communication system KS of the telephone communication network FE via the intelligent communication network IN. Communication with the communication systems KS of the telephone communication network FEN takes place, for example, via the standardized signaling network SS7 in the intelligent communication network IN. In the communication systems KS, a standardized interface to the intelligent communication network IN is in each case provided which is defined as service switching point SSP. A communication relation is established via this SSP interface to a standardized service control point SCP of the intelligent communication network IN, this service control point SCP being implemented in the subscriber server ISC. The information causing the call diversion CF to be set for the affected connection in the telephone communication network FEN is formed in the subscriber server ISC in accordance with the SS7 signaling and transmitted to the affected communication system KS via the intelligent communication network IN.

Please amend the paragraph beginning on line 22 of page 7 as follows:

As an alternative, communication takes, for example, in accordance with a TCP/IP protocol (transmission control protocol/Internet protocol). The transport protocol is implemented, for example, in accordance with the X.25 packet switching protocol, i.e. transmission between a communication system KS of the telephone communication network FEN and the subscriber server ISC takes place via an X.25 connection or an X.25

communication network X.25, communication systems KS frequently having an X.25 communication connection for remote operation and remote maintenance. As an alternative, communication between the subscriber server ISC and telephone communication network FE can take place via the standardized Q3 interface. The information provided for the communication systems KS for setting the call diversion CF is adapted to the operational man/machine language MML of the communication systems KS used in the telephone communication network FEN, e.g. the EWSD switching system by Siemens, i.e. the call diversion CS is set for the telephone terminals FE affected in the telephone communication network FE with the aid of the subscriber server ISC.

Please amend the paragraph beginning on line 7 of page 8 as follows:

According to the invention, an Internet terminal IKE conducting a current Internet session sets a call diversion CF in the telephone communication network FE with the aid of the subscriber server ISC. The call diversion CF is set for the associated connection in the telephone communication network FE via which the current Internet session is being conducted. As an alternative, the call diversion CF can be set by the associated telephone terminal FE before the Internet session FE which is to be currently conducted. This assumes that the traffic relation from the associated telephone terminal FE of the telephone communication network FE to the Internet INT is established via an access device ISP of an Internet service provider. In this arrangement, the connection set-up is initiated and performed by the telephone terminal FE and, after a connection set-up via the telephone communication network FE and via the access device ISP to the Internet INT, a personal computer PC inserted between the telephone communication network FE and the telephone terminal FE initiates an Internet session. In this method, the

subscriber line ASL is controlled by a modem function MOD implemented by a modem, with the aid of which the digital signals or data transmitted by the personal computer PC are converted into analog signals which can be transmitted via the telephone communication network FE and conversely. As an alternative, the access function and signaling of the telephone terminal FE can be integrated in a modem function MOD - i.e. in a modem - of a personal computer PC, the user interface of the personal computer PC also being used for setting up and clearing down the connection.

Please amend the paragraph beginning on line 1 of page 9 as follows:

Furthermore, a gateway GW, with the aid of which the Voice over Internet function VoIP of the Internet is converted into telephone communication network protocols, is provided for intercommunication between the Internet INT and the telephone communication network FE. Advantageously, the standardized signaling No. 7 - indicated by the designation SS7 in Figure 1 - is used between the gateway GW and the telephone communication network FEN and the physical interface is implemented by a PCM interface PCM - indicated by the designation PCM in Figure 1.

Please amend the paragraph beginning on line 13 of page 9 as follows:

In the text which follows, the setting of a call diversion CF from an Internet terminal IKE in a communication system KS or, respectively, in the telephone communication network FEN is described. A communication relation or an Internet session has been set up with the aid of the associated telephone terminal FE in this case. To use the Voice over Internet function VoIP in the Internet INT, an Internet terminal IKE initiates registration at its gatekeeper GK - at the

session initiation protocol (SIP) GK in an alternative solution - with the aid of the administration server ADS. In this process, it is indicated to the administration server ADS that the Internet terminal IKE is actively conducting an Internet session and the Voice over Internet function VoIP is possible on its personal computer PC. The registration is carried out by log-in in the Internet INT, the administration server ADS checking whether the Internet terminal IKE is allowed to access the Voice over Internet function VoIP. For this purpose, the administration server ADS calls up the authentication server RAD in order to verify the authentication for the Voice over Internet function VoIP. The authentication server RAD transmits a positive or negative confirmation to the administration server ADS in accordance with the result of the check. Following this, the Internet terminal IKE performs a registration at the gatekeeper GK. After this registration, the administration server ADS provides an Internet address for the relevant Internet terminal IKE and stores it in the presence service which forwards this Internet address to the gatekeeper GK and to the call number server CFS.

Please amend the paragraph beginning on line 5 of page 10 as follows:

Following this, a web page is opened in the Internet terminal IKE, initiating a communication relation to the subscriber server ISC is initiated. After checking its authentication, the Internet terminal IKE affected can change its call diversion information CFA in the database. The call diversion information CFA is transmitted via the intelligent communication network IN to the associated communication system KS of the telephone communication network FN, where it is stored in its database with the aid of a call diversion routine CFR. This is indicated by a rectangle marked by CFR in Figure 1, as a result of which a

call diversion CF is set for the telephone connection or, respectively, the telephone terminal FE, the associated Internet terminal IKE of which is currently conducting an Internet session.

Please amend the paragraph beginning on line 22 of page 10 as follows:

In the text which follows, a connection set-up for a voice traffic relation - called voice connection SPV in the further text - from a telephone terminal FE to an Internet terminal IKE is described with the aid of a flowchart in Figure 2. The called Internet terminal IKE conducts an Internet session and a call diversion CF being set for its connection in the telephone communication network FEN in accordance with the preceding registration.

Please amend the paragraph beginning on line 32 of page 10 as follows:

In Figure 2, a dashed vertical line is in each case specified for the telephone terminal FE affected, the communication network FEN or communication system KS, respectively, the gateway GW, the gatekeeper GK and the Internet terminal IKE affected or the personal computer PC respectively, the dashed lines indicating the progress in time of the signaling described in Figure 2.

Please amend the paragraph beginning on line 1 of page 11 as follows:

The calling telephone terminal FE transmits a call information item CALL to the telephone communication network FEN, and the communication system KS affected diverts this call information item CALL to the gateway GW due to the call number rn specified in this information item. This call diversion CF is carried out on the basis of the call diversion information cfa stored in the communication system KS for the connection, determined by the